We claim:

1. A transmission node comprising

apparatus that receives at an input via a transmission path an optical signal formed from a plurality of optical signals of respective wavelengths, in which the levels of individual ones of the optical signals may have been affected by Raman scattering occurring along the transmission path,

sensor apparatus operative for generating a first signal, P_0, indicative of the total power across a group of the received optical signals, and a second signal, P_1, indicative of the total power across the group of optical signals after those signals have been subjected to a predetermined weighting function, and

controller apparatus for offsetting the affect of such Raman scattering as a function of the sum of the levels of the first and second signals.

2. The optical node of claim 1 wherein the sensor apparatus includes

multiplier apparatus operative for multiplying the signal P_0 by a first constant, C_0, and for multiplying the signal P_1 by a second constant C_1, and

combiner apparatus for combining the product P_0C_0 with the product P_1C_1 to form a signal, P_R, indicative of the degree to which the group of signals were affected by Raman scattering.

3. The optical node of claim 1 wherein the plurality of optical signals includes different bands of optical signals and wherein the node further comprises a bandpass filter to filter one of the bands of optical signals to form the group signals.

4. The node of claim 3 wherein the sensor includes a total power detector and apparatus for supplying a first portion of the power of the group of signals to the total power detector and for supplying a second portion of the power of the group of signals to the predetermined weighting function which generates a weighted version of the group of signals.

5. The optical node of claim 4 wherein the predetermined weighting function includes a router which demultiplexes the group of signals, supplies the demultiplexed signals to weighting apparatus to reduce the level of power of individual ones of the demultiplexed signals proportional to their respective wavelengths, and then routes the weighted signals to a multiplexed output for delivery to a power detector operative for detecting the power across the weighted signals and generating signal P_1.

6. The optical node of claim 5 wherein the weighting apparatus is a variable reflection device.

7. The optical node of claim 5 wherein the weighting apparatus is a variable loss device.

8. A sensor comprising

apparatus for receiving a plurality of optical signals and filtering the plurality of signals to form a group of signals,

first apparatus for processing a first portion of the power levels of the group of signals to generate a first power signal, P_0,

second apparatus for processing a second portion of the power levels of the group of signals to form a group of weighted signals, and processing

the group of weighted signals to generate a second weighted power signal, P_1, and

third apparatus for generating, as a function of the first and second power signals, P_0 and P_1, a signal indicative of whether a particular transmission impairment has affected the levels of individual ones of the received plurality of optical signals.

9. The sensor of claim 8 wherein the transmission impairment is Raman scattering.

10. The sensor of claim 8 wherein the sensor apparatus further comprises

multiplier apparatus operative for multiplying the signal P_0 by a first constant, C_0, and for multiplying the signal P_1 by a second constant C_1, and

combiner apparatus for combining the product P_0C_0 with the product P_1C_1 to form a signal, P_R, indicative of the degree to which the plurality of optical signals were affected by the transmission impairment.

11. The sensor of claim 8 wherein the plurality of optical signals includes different bands of optical signals and wherein the apparatus for filtering is a bandpass filter.

12. The sensor of claim 11 wherein the second apparatus includes a router to demultiplex the group of signals, supply the demultiplexed signals to weighting apparatus to reduce the level of power of individual ones of the demultiplexed signals proportional to their respective wavelengths, and then route the weighted signals to a multiplexed output for delivery to a power detector operative for detecting the power across the weighted signals and generating signal P_1.

13. The optical node of claim 12 wherein the weighting apparatus is a variable reflection device.

14. The optical node of claim 12 wherein the weighting apparatus is a variable loss device.